



# SEQUENCE LISTING

<110> Cahoon, Rebecca E.  
Klein, Theodore M.  
Odell, Joan T.  
Orozco, Emil M. Jr.

<120> PLANT CELL CYCLIN GENES

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<140> US/09/665,308

<141> 2000-09-19

<150> 60/078,735

<151> 1998-03-20

<150> PCT/US99/06047

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<213> Zea mays

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35 40 45

Ile Glu Ala Val Gln Ala Asp Val Thr Ala His Met Arg Ser Ile Leu  
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Cys	Tyr	Ile	Thr	Asp	Asn	Thr	Tyr	Thr	Lys	Glu	Glu	Leu	Leu	Lys	Met	
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Glu	Ser	Asp	Ile	Leu	Lys	Leu	Leu	Lys	Phe	Glu	Leu	Gly	Asn	Pro	Thr	
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 tctttgtcga aaaacaatac cccaacaaga ggcagcgggt tgtgttgggt gaacttccca 180  
 atttacaaaa ctttattgtc tccgaaactc aaaatnngcg caaagagaag ntccctatgtn 240  
 ggaagaatcc caatgagaag aaaccatcac ccacaaacaa caacaccttt ccttcccctc 300  
 agatcancga atcttatgat tcggatatcc acgggtatct tcgtgaaatg gagatgcaga 360  
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 20 25 30  
 Gly Glu Leu Pro Asn Leu Gln Asn Leu Ile Val Ser Glu Thr Gln Asn  
 35 40 45  
 Xaa Arg Lys Glu Lys Xaa Leu Cys Xaa Lys Asn Pro Asn Glu Lys Lys  
 50 55 60  
 Pro Ser Pro Thr Asn Asn Asn Thr Phe Pro Ser Pro Gln Ile Xaa Glu  
 65 70 75 80  
 Ser Tyr Asp Ser Asp Ile His Gly Tyr Leu Arg Glu Met Glu Met Gln  
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aaatatattg	aaagacagaa	actacaactt	cttggaataa	ctagcatgct	gattgcctca	420
aaatatgaag	agatctgtgc	gcctcggtgt	gaagaatttt	gtttcataac	tgataacaca	480
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aaaatggcac	ncgacatcag	actgcaangg	aatccacctc	gagcatanac	tnaatcaaaa	780

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20 25 30  
Gly Leu Asn Val Ile Asp Ile Asp Lys Asp Asn Gly Asn Pro Gln Met  
35 40 45  
Cys Ala Ser Tyr Ala Ala Glu Ile Tyr Arg Asn Leu Met Ala Ala Glu  
50 55 60  
Leu Ile Arg Arg Pro Lys Ser Asn Tyr Met Glu Thr Leu Gln Arg Asp  
65 70 75 80  
Ile Thr Lys Gly Met Arg Gly Ile Leu Ile Asp Trp Ala Leu Arg Phe  
85 90 95  
Leu Glu Glu Tyr Lys Leu Leu Pro Asp Thr Leu Tyr Leu Thr Val Tyr  
100 105 110  
Leu Ile Asp Gln Phe Leu Ser Arg Lys Tyr Ile Glu Arg Gln Lys Leu  
115 120 125  
Gln Leu Leu Gly Ile Thr Ser Met Leu Ile Ala Ser Lys Tyr Glu Glu  
130 135 140  
Ile Cys Ala Pro Arg Val Glu Glu Phe Cys Phe Ile Thr Asp Asn Thr  
145 150 155 160  
Tyr Thr Lys Asn Gln Val Leu Lys Met Glu Cys Glu Val Leu Asn Asp  
165 170 175  
Leu Gly Phe His Leu Ser Val Pro Thr Ile Lys Thr Phe Leu Arg Arg  
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Gly Tyr Leu  
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 35 40 45  
 Val Val Asp Gln Asp Glu Glu Tyr Val Ala Leu Leu Leu Ser Lys Glu  
 50 55 60  
 Ser Ala Ser Gly Gly Gly Gly Pro Val Glu Glu Met Glu Asp Trp Met  
 65 70 75 80  
 Lys Ala Ala Arg Ser Gly Cys Val Arg Trp Ile Ile Lys Thr Thr Ala  
 85 90 95  
 Met Phe Arg Phe Gly Gly Lys Thr Ala Tyr Val Ala Val Asn Tyr Leu

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Asp Arg Phe Leu Ala Gln Arg Arg Val Asn Arg Glu His Ala Trp Gly		
115	120	125
Leu Gln Leu Leu Met Val Ala Cys Met Ser Leu Ala Thr Lys Leu Glu		
130	135	140
Glu His His Ala Pro Arg Leu Ser Glu Phe Pro Leu Asp Ala Cys Glu		
145	150	155
Phe Ala Phe Asp Ser Ala Ser Ile Leu Arg Met Glu Leu Leu Val Leu		
165	170	175
Gly Thr Leu Glu Trp Arg Met Ile Ala Val Thr Pro Phe Pro Tyr Ile		
180	185	190
Ser Tyr Phe Ala Ala Arg Phe Arg Glu Thr Ser Ala Gly Arg Ile Leu		
195	200	205
Met Arg Ala Val Glu Cys Val Phe Ala Ala Ile Lys Val Ile Ser Ser		
210	215	220
Val Glu Xaa Arg Pro Ser Thr Ile Ala Val Ala Ser Ile Leu		
225	230	235

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 <212> PRT  
 <213> Oryza sativa

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 Asp Arg Phe Leu Ala Arg Arg Cys Val Asp Arg Asp Lys Glu Trp Ala  
 35 40 45



Leu Gln Leu Leu Ser Val Ala Cys Leu Ser Leu Ala Ala Lys Val Glu  
 50 55 60  
 Glu Arg Arg Pro Pro Arg Leu Pro Glu Phe Lys Leu Asp Met Tyr Asp  
 65 70 75 80  
 Cys Ala Ser Leu Met Arg Met Glu Leu Leu Val Leu Thr Thr Leu Lys  
 85 90 95  
 Trp Gln Met Ile Thr Glu Thr Pro Phe Ser Tyr Leu Asn Cys Phe Thr  
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 Ala Lys Phe Arg His Asp Glu Arg Lys Ala Ile Val Leu Arg Ala Ile  
 115 120 125  
 Glu Cys Ile Phe Ala Ser Ile Lys Val Ile Ser Ser Val Gly Tyr Gln  
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 Pro Ser Thr Ile Ala Leu Ala Ala Ile Leu Ile Ala Arg Asn Lys Glu  
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 Gln Leu Met Met Leu  
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 tgccaacaca atgaatgcgg aacctccgct gccgcggcg ctctcatgt cggtttcctg 180  
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aatttaaaaa ccttgaattt ttttatttgt tttcaagaga ggagaaccct ctttcacata 2160
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Cys Leu Ser Asp Tyr Asp Leu Leu Cys Gly Glu Asp Ser Ser Gly Ile
20 25 30

Leu Ser Gly Glu Ser Pro Glu Cys Ser Phe Ser Asp Ile Asp Ser Ser
35 40 45

Pro Pro Pro Pro Ser Pro Thr Thr Glu Asp Cys Tyr Ser Ile Ala Ser
50 55 60

Phe Ile Glu His Glu Arg Asn Phe Val Pro Gly Phe Glu Tyr Leu Ser
65 70 75 80

Arg Phe Gln Ser Arg Ser Leu Asp Ala Asn Ala Arg Glu Glu Ser Val
85 90 95

Gly Trp Ile Leu Lys Val His Ala Tyr Tyr Gly Phe Gln Pro Leu Thr
100 105 110

Ala Tyr Leu Ala Val Asn Tyr Met Asp Arg Phe Leu Asp Ser Arg Arg
115 120 125

Leu Pro Glu Thr Asn Gly Trp Pro Leu Gln Leu Val Ser Val Ala Cys
130 135 140

Leu Ser Leu Ala Ala Lys Met Glu Glu Pro Leu Val Pro Ser Leu Leu
145 150 155 160

Asp Leu Gln Ile Glu Gly Ala Lys Tyr Ile Phe Glu Pro Arg Thr Ile
165 170 175

Arg Arg Met Glu Leu Leu Val Leu Gly Val Leu Asp Trp Arg Leu Arg
180 185 190

Ser Val Thr Pro Leu Cys Phe Leu Ala Phe Phe Ala Cys Lys Val Asp
195 200 205

Ser Thr Gly Thr Phe Ile Arg Phe Leu Ile Ser Arg Ala Thr Glu Ile
210 215 220

Ile Val Ser Asn Ile Gln Glu Ala Ser Phe Leu Ala Tyr Trp Pro Ser
225 230 235 240

Cys Ile Ala Ala Ala Ala Ile Leu Thr Ala Ala Asn Glu Ile Pro Asn
245 250 255

Trp Ser Val Val Lys Pro Glu Asn Ala Glu Ser Trp Cys Glu Gly Leu
260 265 270

Arg Lys Glu Lys Val Ile Gly Cys Tyr Gln Leu Met Gln Glu Leu Val
275 280 285

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Ile Asn Asn Asn Gln Arg Lys Leu Pro Leu Leu Lys Val Leu Pro Gln  
290 295 300

Leu Arg Val Thr Thr Arg Thr Arg Met Arg Ser Ser Thr Val Ser Ser  
305 310 315 320

Phe Ser Ser Ser Ser Ser Thr Ser Phe Ser Leu Ser Cys Lys Arg Arg  
325 330 335

Lys Leu Asn Asn Arg Leu Trp Val Asp Asp Lys Gly Asn Ser Glu  
340 345 350

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<211> 1994  
<212> DNA  
<213> Glycine max

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ttcgaatacc tcaataggtt ccaatctcgc tctctcgacg cctctgccag agaagaatcc 180  
gttgcatgga ttctcaaggt gcaggcttat tacgcttttc aaccggtcac ggcttatctt 240  
tccgttaact acttggatag gttcttgaat tctcgaccgt tgccgccgaa aacgaatggg 300  
tggccactgc aacttctctc tgttgcggtc ttgtctttag cagcaaagat ggaggaatct 360  
ctagtcccat ctcttttgga ccttcaggta gaagggtgta aatacgtatt tgaacccaaa 420  
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gggttcctca ttccacgtgc tacacaaatt atcttatcta atatacaaga ggctagcttt 600  
cttgcggtatt ggccatcatg cattgctgca gcagccattc tccatgcagc aaatgaaatt 660  
cctaattggt ctctcggttag gcctgagcat gcagagtcac ggtgtgaggg gttaagaaag 720  
gagaaaatta taggggtgta ccaattaatg caagaacttg tgattgacaa taaccagagg 780  
aaaccccccta aggtgttacc acagctgcga gtgacaatat ctccggcccat tatgaggtct 840  
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ttttgttttc ttttttagtg ctaattggct ttgggagaaa ttggagtaaa ggcctttggg 1920  
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aaaaaaaaaa aaaa 1994

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<211> 318  
<212> PRT  
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20 25 30

Asp Glu Arg Asn Phe Val Pro Gly Phe Glu Tyr Leu Asn Arg Phe Gln  
           35                                  40                                  45  
 Ser Arg Ser Leu Asp Ala Ser Ala Arg Glu Glu Ser Val Ala Trp Ile  
       50                                  55                                  60  
 Leu Lys Val Gln Ala Tyr Tyr Ala Phe Gln Pro Val Thr Ala Tyr Leu  
   65                                  70                                  75                                  80  
 Ser Val Asn Tyr Leu Asp Arg Phe Leu Asn Ser Arg Pro Leu Pro Pro  
                                   85                                  90                                  95  
 Lys Thr Asn Gly Trp Pro Leu Gln Leu Leu Ser Val Ala Cys Leu Ser  
                                   100                                  105                                  110  
 Leu Ala Ala Lys Met Glu Glu Ser Leu Val Pro Ser Leu Leu Asp Leu  
                                   115                                  120                                  125  
 Gln Val Glu Gly Ala Lys Tyr Val Phe Glu Pro Lys Thr Ile Arg Arg  
       130                                  135                                  140  
 Met Glu Leu Leu Val Leu Gly Val Leu Asp Trp Arg Leu Arg Ser Val  
   145                                  150                                  155                                  160  
 Thr Pro Phe Ser Phe Leu Asp Phe Phe Ala Cys Lys Leu Asp Ser Thr  
                                   165                                  170                                  175  
 Gly Thr Phe Thr Gly Phe Leu Ile Ser Arg Ala Thr Gln Ile Ile Leu  
                                   180                                  185                                  190  
 Ser Asn Ile Gln Glu Ala Ser Phe Leu Ala Tyr Trp Pro Ser Cys Ile  
                                   195                                  200                                  205  
 Ala Ala Ala Ala Ile Leu His Ala Ala Asn Glu Ile Pro Asn Trp Ser  
       210                                  215                                  220  
 Leu Val Arg Pro Glu His Ala Glu Ser Trp Cys Glu Gly Leu Arg Lys  
   225                                  230                                  235                                  240  
 Glu Lys Ile Ile Gly Cys Tyr Gln Leu Met Gln Glu Leu Val Ile Asp  
                                   245                                  250                                  255  
 Asn Asn Gln Arg Lys Pro Pro Lys Val Leu Pro Gln Leu Arg Val Thr  
                                   260                                  265                                  270  
 Ile Ser Arg Pro Ile Met Arg Ser Ser Val Ser Ser Phe Leu Ala Ser  
                                   275                                  280                                  285  
 Ser Ser Ser Pro Ser Ser Ser Ser Leu Ser Cys Arg Arg Arg Lys Leu  
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<210> 15  
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 <213> Triticum aestivum

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 gagatttggg ctccagaggt gaacgacttc atattgttct ccgacaacac atatactagg 180  
 gagcagattc tgaggatgga gaaggcaatc ctgaacatgc ttgagtggaa cctgacagtg 240  
 cccacacctt acgtcttcct cgtgtgattc gccaaaggccg catcctcctg agataagaag 300  
 aacggcaagg aggtaaaagg aacaccagat tttaacaaat cctcagatgt agtacgtatc 360  
 tccatttgcc aaacatgatc tattgctgaa ttctgttctc cctgggtgat tgtctaaatg 420  
 gagacacgtc tttttttcgt ggactggcgc tctgtagtat ggacagaata tgtttgattc 480  
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 <210> 16  
 <211> 75  
 <212> PRT  
 <213> Triticum aestivum  
  
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 <221> UNSURE  
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 <223> Xaa = ANY AMINO ACID  
  
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 Lys Tyr Glu Glu Ile Trp Ala Pro Glu Val Asn Asp Phe Ile Leu Phe  
 20 25 30  
  
 Ser Asp Asn Thr Tyr Thr Arg Glu Gln Ile Leu Arg Met Glu Lys Ala  
 35 40 45  
  
 Ile Leu Asn Met Leu Glu Trp Asn Leu Thr Val Pro Thr Pro Tyr Val  
 50 55 60  
  
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 65 70 75  
  
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 <212> DNA  
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accagccacc cagcaactcca gccgccagac cagagtctnc ggcgccgccg tcgcacgaca 180  
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agcgtccatg ctctctctgcg ccgaggagca cagcagcatc ctgtggtacg aggaggagga 360  
ggaggagctg gaggcggtcg ggagaaggag cggccggtcg ccgggctacg gggacgactt 420  
cggcgccggac ttgttcccgc cgcagtcgga ggaatgcgtg gccggtctgg tggagcggga 480  
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aaaaaaaaaa ac 1932

<210> 18  
<211> 388  
<212> PRT  
<213> Zea mays

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35 40 45  
Phe Gly Ala Asp Leu Phe Pro Pro Gln Ser Glu Glu Cys Val Ala Gly  
50 55 60  
Leu Val Glu Arg Glu Arg Asp His Met Pro Gly Pro Cys Tyr Gly Asp  
65 70 75 80  
Arg Leu Arg Gly Gly Gly Gly Cys Leu Cys Val Arg Arg Glu Ala Val  
85 90 95  
Asp Trp Ile Trp Lys Ala Tyr Thr His His Arg Phe Arg Pro Leu Thr  
100 105 110  
Ala Tyr Leu Ala Val Asn Tyr Leu Asp Arg Phe Leu Ser Leu Ser Glu  
115 120 125

Val Pro Asp Cys Lys Asp Trp Met Thr Gln Leu Leu Ala Val Ala Cys  
 130 135 140  
 Val Ser Leu Ala Ala Lys Met Glu Glu Thr Ala Val Pro Gln Cys Leu  
 145 150 155 160  
 Asp Leu Gln Glu Val Gly Asp Ala Arg Tyr Val Phe Glu Ala Lys Thr  
 165 170 175  
 Val Gln Arg Met Glu Leu Leu Val Leu Thr Thr Leu Asn Trp Arg Met  
 180 185 190  
 His Ala Val Thr Pro Phe Ser Tyr Val Asp Tyr Phe Leu Asn Lys Leu  
 195 200 205  
 Asn Asn Gly Gly Ser Thr Ala Pro Arg Ser Cys Trp Leu Leu Gln Ser  
 210 215 220  
 Ala Glu Leu Ile Leu Arg Ala Ala Arg Gly Thr Gly Cys Val Gly Phe  
 225 230 235 240  
 Arg Pro Ser Glu Ile Ala Ala Ala Val Ala Ala Ala Val Ala Gly Asp  
 245 250 255  
 Val Asp Asp Ala Asp Gly Val Glu Asn Ala Cys Cys Ala His Val Asp  
 260 265 270  
 Lys Glu Arg Val Leu Arg Cys Gln Glu Ala Ile Gly Ser Met Ala Ser  
 275 280 285  
 Ser Ala Ala Ile Asp Asp Ala Thr Val Pro Pro Lys Ser Ala Arg Arg  
 290 295 300  
 Arg Ser Ser Pro Val Pro Val Pro Gln Ser Pro Val Gly Val Leu Asp  
 305 310 315 320  
 Ala Ala Pro Cys Leu Ser Tyr Arg Ser Glu Glu Ala Ala Thr Ala Thr  
 325 330 335  
 Ala Thr Ala Thr Ser Ala Ala Ser His Gly Ala Pro Gly Ser Ser Ser  
 340 345 350  
 Ser Ser Ser Thr Ser Pro Val Thr Ser Lys Arg Arg Lys Leu Ala Ser  
 355 360 365  
 Arg Cys Asp Gly Ser Cys Ser Asp Arg Ser Lys Arg Ala Pro Ala Gln  
 370 375 380

Trp Thr Lys Glu  
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 <212> DNA  
 <213> *Oryza sativa*

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 tctccgccgn cgacatccag aggggcgagg agttcatgtt cgacgaggcg aaaatccagc 180  
 gcatggagca gatggtgctc aacgcgctgg agtggcggac gcgctccgctc acgccgctcg 240  
 ccttcctcgg nttctttctc tccgcgtggt tcccgcaagc cgcggcaccc ggcgctgctc 300  
 gatgccatca nggcccgcgc gtcgagctcc tcctccgcgt ctaagccggg angtgaacna 360  
 tgggtgggagt tctccccctt cgggtggccgg ccgncgcggg tctcctcnen gccgncggan 420  
 aaggcntccg gnngcccaaa ctcttcnct tccaaanctg nnggccccgn tttgncccct 480  
 t 481

<210> 20  
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 <212> PRT  
 <213> Oryza sativa

<220>  
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 Pro Arg Leu Leu Ala Ile Ser Cys Leu Xaa Leu Ala Ala Lys Met Gln  
 20 25 30  
 Arg Ala Ala Ala Ile Ser Ala Xaa Asp Ile Gln Arg Gly Glu Glu Phe  
 35 40 45  
 Met Phe Asp Glu Ala Lys Ile Gln Arg Met Glu Gln Met Val Leu Asn  
 50 55 60  
 Ala Leu Glu Trp Arg Thr Arg Ser Val Thr Pro Leu Ala Phe Leu Gly  
 65 70 75 80

Phe Phe Leu Ser Ala Trp Phe Pro Gln Ala Ala Ala Pro Gly Ala Ala  
85 90 95

Arg Cys His Xaa Gly Arg Ala Val Glu Leu Leu Leu Arg Val  
100 105 110

<210> 21  
<211> 789  
<212> DNA  
<213> Triticum aestivum

<400> 21  
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aaagtgatgg agcttttggg cttcagcacc ttgaaatgga ggatgcaagc tgttactgct 180  
tgctcgttta ttgactactt cctttgcaaa ttcaatgatc atgacacacc ctccatgctt 240  
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tcagttgtcg aaatggctac aactaattgc aagtatataa acaagggagt gtgatgtgac 420  
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gacatgcttt aattggctta gtaaaaaata cttgctaaag agaaataaga ttcaaagtag 540  
atgtttttat tgtagattag gatattgtgt ttctgccacc ggttcgactt ctcatattag 600  
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aaaaaaaaaa 789

<210> 22  
<211> 163  
<212> PRT  
<213> Triticum aestivum

<220>  
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<223> Xaa = ANY AMINO ACID

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<223> Xaa = ANY AMINO ACID

<220>  
<221> UNSURE  
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<223> Xaa = ANY AMINO ACID

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20 25 30  
Ser Ala Phe Glu Ala Arg Thr Ile Lys Val Met Glu Leu Val Phe  
35 40 45  
Ser Thr Leu Lys Trp Arg Met Gln Ala Val Thr Ala Cys Ser Phe Ile  
50 55 60  
Asp Tyr Phe Leu Cys Lys Phe Asn Asp His Asp Thr Pro Ser Met Leu  
65 70 75 80  
Ala Phe Ser Cys Ser Thr Asp Leu Ile Leu Ser Thr Thr Lys Xaa Ala



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 <222> (1126)  
 <223> n = A, C, G or T

<400> 23  
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 gcgcgctccg gctcggcgac cagccctgga tggcgcgccct agccgccgct acctgcttcg 180  
 cgctcgcgcg caaggtcgag gagacgcgcg tgccgccgct cctcgacctc cagctctacg 240  
 ccgccgctga cgccgcggat ccgtacgtat tcgaggccaa gacggtgcgc cggatggagc 300  
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 tcatcaatgc ccccgaggac aagaccgccg agtgtgccaa gatcatctcc gaggtgacgg 600  
 gcatgagctt cctcgccctg gatgtcggcg tgagcgccgg aaataagcgt aagcacgcgg 660  
 cggcgcagtt gtactcgccg ccgccgagcc cgagcgcggt gatcggcgcg ctgtcctgct 720  
 tcagctgcga gagctcgacg tccgccaccg ctatggctgc ggcggtcggc ccgtgggcgc 780  
 cgtcggcgct cgtgtccgtg tcgtcctctc cagagccacc aggtcggggc cccaagcgcg 840  
 cagcggcgcc gtccggcgct gcgtcggcgt cagccggggg cgccgccacc gtccaggtcc 900  
 cgcacagctt acccccccgc gaggagagcc gcgacgcctg gccgtccacc tgcgcgcgct 960  
 gacgcaccgt gccggaaacg gtgcctatgg cgagaccgcc gttcgggtggc ggtggagaat 1020  
 ggagaacaag gagcatcatt ggctcgcgct ggtgagcagg agaacgaact attttgccca 1080  
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<210> 24  
 <211> 318  
 <212> PRT  
 <213> Zea mays

<400> 24  
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 20 25 30  
 Arg Cys Phe Leu Pro Gly Gly Ala Leu Arg Leu Gly Asp Gln Pro Trp  
 35 40 45  
 Met Ala Arg Leu Ala Ala Val Thr Cys Phe Ala Leu Ala Ala Lys Val  
 50 55 60  
 Glu Glu Thr Arg Val Pro Pro Leu Leu Asp Leu Gln Leu Tyr Ala Ala  
 65 70 75 80  
 Ala Asp Ala Ala Asp Pro Tyr Val Phe Glu Ala Lys Thr Val Arg Arg  
 85 90 95  
 Met Glu Leu Leu Val Leu Ser Ala Leu Gly Trp Arg Met His Pro Val  
 100 105 110  
 Thr Pro Phe Ser Tyr Leu Gln Pro Val Leu Ala Asp Ala Ala Thr Arg  
 115 120 125  
 Leu Arg Ser Cys Glu Gly Val Leu Leu Ala Val Met Ala Asp Trp Arg  
 130 135 140  
 Trp Pro Arg His Arg Pro Ser Ala Trp Ala Ala Ala Leu Leu Ile  
 145 150 155 160  
 Thr Ala Ala Ala Gly Asp Gly Gly Asp Gly Asp Gly Asp Thr Glu Leu  
 165 170 175

Leu Ala Leu Ile Asn Ala Pro Glu Asp Lys Thr Ala Glu Cys Ala Lys  
 180 185 190  
 Ile Ile Ser Glu Val Thr Gly Met Ser Phe Leu Ala Cys Asp Val Gly  
 195 200 205  
 Val Ser Ala Gly Asn Lys Arg Lys His Ala Ala Ala Gln Leu Tyr Ser  
 210 215 220  
 Pro Pro Pro Ser Pro Ser Gly Val Ile Gly Ala Leu Ser Cys Phe Ser  
 225 230 235 240  
 Cys Glu Ser Ser Thr Ser Ala Thr Ala Met Ala Ala Ala Val Gly Pro  
 245 250 255  
 Trp Ala Pro Ser Ala Ser Val Ser Val Ser Ser Ser Pro Glu Pro Pro  
 260 265 270  
 Gly Arg Ala Pro Lys Arg Ala Ala Ala Ala Ser Ala Ser Ala Ser Ala  
 275 280 285  
 Ser Ala Gly Val Ala Pro Pro Val Gln Val Pro His Gln Leu Pro Pro  
 290 295 300  
 Asp Glu Glu Ser Arg Asp Ala Trp Pro Ser Thr Cys Ala Ala  
 305 310 315

<210> 25  
 <211> 674  
 <212> DNA  
 <213> Glycine max  
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 <222> (527)  
 <223> n = A, C, G or T

<220>  
 <221> unsure  
 <222> (561)  
 <223> n = A, C, G or T

<220>  
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 <222> (640)  
 <223> n = A, C, G or T

<220>  
 <221> unsure  
 <222> (643)  
 <223> n = A, C, G or T

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 tccttctcca tcggggcatt ccgcactctc catcccataa aagtcccaga tccaagatgg 120  
 cttaccacca tcaaaaatcc cttttggaca cctatactg ctccgaagag cattggatag 180  
 gggaagggtga atttgaccaa gcagaggagg agtacggtaa cagtaatagc aatagtagca 240  
 gcaccttagt aaacaactcc cctgagtcct cccctcattt gttgctcgaa agcgacatgt 300  
 tttggggacga acaagagttg gcatcgctgt tggagaaaga acaacacaaac ccactaagca 360  
 cttgctgtct ccaaagcaac cctgccttgg aggggtgctcg catagaagcc gtggagtgga 420  
 ttctcaaaagt aaacgcccac tactccttct ctgccctcac cgtgtgttctt gctgtcaact 480  
 actttgaccg ttttctcttc agcttccgct ttcagaatga cattaancca tggatgactc 540  
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 <211> 186  
 <212> PRT  
 <213> Glycine max

<220>  
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 <222> (137)  
 <223> Xaa = ANY AMINO ACID

<220>  
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 <222> (175)..(176)  
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 Tyr Gly Asn Ser Asn Ser Asn Ser Ser Ser Thr Leu Val Asn Asn Ser  
 35 40 45  
 Pro Glu Ser Ser Pro His Leu Leu Leu Glu Ser Asp Met Phe Trp Asp  
 50 55 60  
 Glu Gln Glu Leu Ala Ser Leu Leu Glu Lys Glu Gln His Asn Pro Leu  
 65 70 75 80  
 Ser Thr Cys Cys Leu Gln Ser Asn Pro Ala Leu Glu Gly Ala Arg Ile  
 85 90 95  
 Glu Ala Val Glu Trp Ile Leu Lys Val Asn Ala His Tyr Ser Phe Ser  
 100 105 110  
 Ala Leu Thr Ala Val Leu Ala Val Asn Tyr Phe Asp Arg Phe Leu Phe  
 115 120 125  
 Ser Phe Arg Phe Gln Asn Asp Ile Xaa Pro Trp Met Thr Arg Gly Arg  
 130 135 140  
 Cys Arg Arg Leu Xaa Leu Pro Arg Cys Gln Ser Gly Arg Asp Thr Arg  
 145 150 155 160  
 Ser Leu Ser Tyr Leu Thr Leu Gln Gln Ser Gly Arg Arg Ser Xaa Xaa  
 165 170 175  
 Phe Val Pro Ser Gln Arg Arg Leu Lys Lys  
 180 185

<210> 27  
 <211> 554  
 <212> DNA  
 <213> Glycine max

<400> 27  
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 ttcacacact gagacacaca gagagagaaa aataaagggt gtgatgggtg tcttactgag 120

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tggttttcttt ttataatgaa caaagaactg cacaccctct tcttcaccga agaagaagat 180
ggcaattcag caccacaatg accaactaga gcataatgaa aatgtctcat ctgtccttga 240
tgcccttttac tgtgacgaag gaaagtggga agaggaagag gaggagaaaag aagaagaaga 300
agatgaaggt gaaaatgaaa gtgaagtgaac aacaaacact gcaacttgct ttttcctct 360
gctcttggtg gagcaagact tgttctggga agatgaggaa ctaaactcta tcttttccaa 420
agagaaggtt caacatgaag aagcctatgg tataacaatc tgaacagtga tgtgtataac 480
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tgatgatgct gaat 554

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<210> 28
<211> 94
<212> PRT
<213> Glycine max

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<400> 28
Met Ala Ile Gln His His Asn Asp Gln Leu Glu His Asn Glu Asn Val
1 5 10 15
Ser Ser Val Leu Asp Ala Leu Tyr Cys Asp Glu Gly Lys Trp Glu Glu
20 25 30
Glu Glu Glu Glu Lys Glu Glu Glu Glu Asp Glu Gly Glu Asn Glu Ser
35 40 45
Glu Val Thr Thr Asn Thr Ala Thr Cys Leu Phe Pro Leu Leu Leu Leu
50 55 60
Glu Gln Asp Leu Phe Trp Glu Asp Glu Glu Leu Asn Ser Ile Phe Ser
65 70 75 80
Lys Glu Lys Val Gln His Glu Glu Ala Tyr Gly Ile Thr Ile
85 90

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<210> 29
<211> 372
<212> PRT
<213> Catharanthus roseus

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<400> 29
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1 5 10 15
Arg Ala Val Glu Ala Met Ala Ala Ser Glu Gln Gln Arg Pro Ser Lys
20 25 30
Lys Arg Val Val Leu Gly Glu Leu Lys Asn Leu Ser Ser Asn Ile Ser
35 40 45
Ser Ile Gln Thr Tyr Asp Phe Ser Ser Gly Pro Gln Lys Gln Gln Lys
50 55 60
Asn Lys Asn Lys Arg Lys Ala Lys Glu Ser Leu Gly Phe Glu Val Lys
65 70 75 80
Glu Lys Lys Val Glu Glu Ala Gly Ile Asp Val Phe Ser Gln Ser Asp
85 90 95
Asp Pro Gln Met Cys Gly Ala Tyr Val Ser Asp Ile Tyr Glu Tyr Leu
100 105 110
His Lys Met Glu Met Glu Thr Lys Arg Arg Pro Leu Pro Asp Tyr Leu
115 120 125
Asp Lys Val Gln Lys Asp Val Thr Ala Asn Met Arg Gly Val Leu Ile
130 135 140

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Asp Trp Leu Val Glu Val Ala Glu Glu Tyr Lys Leu Leu Pro Asp Thr  
 145 155 160  
 Leu Tyr Leu Thr Val Ser Tyr Ile Asp Arg Phe Leu Ser Met Asn Ala  
 165 170 175  
 Leu Ser Arg Gln Lys Leu Gln Leu Leu Gly Val Ser Ser Met Leu Ile  
 180 185 190  
 Ala Ser Lys Tyr Glu Glu Ile Ser Pro Pro His Val Glu Asp Phe Cys  
 195 200 205  
 Tyr Ile Thr Asp Asn Thr Tyr Lys Lys Glu Glu Val Val Lys Met Glu  
 210 215 220  
 Ala Asp Val Leu Lys Phe Leu Lys Phe Glu Met Gly Asn Pro Thr Ile  
 225 230 235 240  
 Lys Thr Phe Leu Arg Arg Leu Thr Arg Val Val Gln Asp Gly Asp Lys  
 245 250 255  
 Asn Pro Asn Leu Gln Phe Glu Phe Leu Gly Tyr Tyr Leu Ala Glu Leu  
 260 265 270  
 Ser Leu Leu Asp Tyr Gly Cys Val Lys Phe Leu Pro Ser Leu Ile Ala  
 275 280 285  
 Ser Ser Val Ile Phe Leu Ser Arg Phe Thr Leu Gln Pro Lys Val His  
 290 295 300  
 Pro Trp Asn Ser Leu Leu Gln His Asn Ser Gly Tyr Lys Pro Ala Asp  
 305 310 315 320  
 Leu Lys Glu Cys Val Leu Ile Ile His Asp Leu Gln Leu Ser Lys Arg  
 325 330 335  
 Gly Ser Ser Leu Val Ala Val Arg Asp Lys Tyr Lys Gln His Lys Phe  
 340 345 350  
 Lys Cys Val Ser Thr Leu Thr Ala Pro Pro Ser Ile Pro Asp Glu Phe  
 355 360 365  
 Phe Glu Asp Ile  
 370  
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 <211> 335  
 <212> PRT  
 <213> Arabidopsis thaliana  
 <400> 30  
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 20 25 30  
 Gly Glu Ser Thr Val Asp Phe Ser Ser Ser Glu Val Asp Ser Trp Pro  
 35 40 45  
 Gly Asp Ser Ile Ala Cys Phe Ile Glu Asp Glu Arg His Phe Val Pro  
 50 55 60  
 Gly His Asp Tyr Leu Ser Arg Phe Gln Thr Arg Ser Leu Asp Ala Ser  
 65 70 75 80



Ala	Arg	Glu	Asp	Ser	Val	Ala	Trp	Ile	Leu	Lys	Val	Gln	Ala	Tyr	Tyr		
				85					90					95			
Asn	Phe	Gln	Pro	Leu	Thr	Ala	Tyr	Leu	Ala	Val	Asn	Tyr	Met	Asp	Arg		
			100					105					110				
Phe	Leu	Tyr	Ala	Arg	Arg	Leu	Pro	Glu	Thr	Ser	Gly	Trp	Pro	Met	Gln		
		115					120					125					
Leu	Leu	Ala	Val	Ala	Cys	Leu	Ser	Leu	Ala	Ala	Lys	Met	Glu	Glu	Ile		
	130					135					140						
Leu	Val	Pro	Ser	Leu	Phe	Asp	Phe	Gln	Val	Ala	Gly	Val	Lys	Tyr	Leu		
145					150					155					160		
Phe	Glu	Ala	Lys	Thr	Ile	Lys	Arg	Met	Glu	Leu	Leu	Val	Leu	Ser	Val		
				165					170					175			
Leu	Asp	Trp	Arg	Leu	Arg	Ser	Val	Thr	Pro	Phe	Asp	Phe	Ile	Ser	Phe		
			180					185					190				
Phe	Ala	Tyr	Lys	Ile	Asp	Pro	Ser	Gly	Thr	Phe	Leu	Gly	Phe	Phe	Ile		
		195					200					205					
Ser	His	Ala	Thr	Glu	Ile	Ile	Leu	Ser	Asn	Ile	Lys	Glu	Ala	Ser	Phe		
	210					215					220						
Leu	Glu	Tyr	Trp	Pro	Ser	Ser	Ile	Ala	Ala	Ala	Ala	Ile	Leu	Cys	Val		
225					230				235						240		
Ala	Asn	Glu	Leu	Pro	Ser	Leu	Ser	Ser	Val	Val	Asn	Pro	His	Glu	Ser		
				245					250					255			
Pro	Glu	Thr	Trp	Cys	Asp	Gly	Leu	Ser	Lys	Glu	Lys	Ile	Val	Arg	Cys		
			260					265					270				
Tyr	Arg	Leu	Met	Lys	Ala	Met	Ala	Ile	Glu	Asn	Asn	Arg	Leu	Asn	Thr		
		275					280					285					
Pro	Lys	Val	Ile	Ala	Lys	Leu	Arg	Val	Ser	Val	Arg	Ala	Ser	Ser	Thr		
	290					295					300						
Leu	Thr	Arg	Pro	Ser	Asp	Glu	Ser	Ser	Ser	Pro	Cys	Lys	Arg	Arg	Lys		
305					310					315					320		
Leu	Ser	Gly	Tyr	Ser	Trp	Val	Gly	Asp	Glu	Thr	Ser	Thr	Ser	Asn			
				325					330					335			
<210> 31																	
<211> 354																	
<212> PRT																	
<213> Nicotiana tabacum																	
<400> 31																	
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Thr	Glu	Thr	Lys	Ser	Leu	Cys	Phe	Asp	Asp	Val	Asp	Ser	Leu	Thr	Ile		
			20					25					30				
Ser	Gln	Gln	Asn	Ile	Glu	Thr	Lys	Ser	Lys	Asp	Leu	Ser	Phe	Asn	Asn		
			35				40					45					
Gly	Ile	Arg	Ser	Glu	Pro	Leu	Ile	Asp	Leu	Pro	Ser	Leu	Ser	Glu	Glu		
	50					55					60						

Cys Leu Ser Phe Met Val Gln Arg Glu Met Glu Phe Leu Pro Lys Asp  
 65 70 75 80  
 Asp Tyr Val Glu Arg Leu Arg Ser Gly Asp Leu Asp Leu Ser Val Arg  
 85 90 95  
 Lys Glu Ala Leu Asp Trp Ile Leu Lys Ala His Met His Tyr Gly Phe  
 100 105 110  
 Gly Glu Leu Ser Phe Cys Leu Ser Ile Asn Tyr Leu Asp Arg Phe Leu  
 115 120 125  
 Ser Leu Tyr Glu Leu Pro Arg Ser Lys Thr Trp Thr Val Gln Leu Leu  
 130 135 140  
 Ala Val Ala Cys Leu Ser Leu Ala Ala Lys Met Glu Glu Ile Asn Val  
 145 150 155 160  
 Pro Leu Thr Val Asp Leu Gln Val Gly Asp Pro Lys Phe Val Phe Glu  
 165 170 175  
 Gly Lys Thr Ile Gln Arg Met Glu Leu Leu Val Leu Ser Thr Leu Lys  
 180 185 190  
 Trp Arg Met Gln Ala Tyr Thr Pro Tyr Thr Phe Ile Asp Tyr Phe Met  
 195 200 205  
 Arg Lys Met Asn Gly Asp Gln Ile Pro Ser Arg Pro Leu Ile Ser Gly  
 210 215 220  
 Ser Met Gln Leu Ile Leu Ser Ile Ile Arg Ser Ile Asp Phe Leu Glu  
 225 230 235 240  
 Phe Arg Ser Ser Glu Ile Ala Ala Ser Val Ala Met Ser Val Ser Gly  
 245 250 255  
 Glu Ile Gln Ala Lys Asp Ile Asp Lys Ala Met Pro Cys Phe Phe Ile  
 260 265 270  
 His Leu Asp Lys Gly Arg Val Gln Lys Cys Val Glu Leu Ile Gln Asp  
 275 280 285  
 Leu Thr Thr Ala Thr Ile Thr Thr Ala Ala Ala Ala Ser Leu Val Pro  
 290 295 300  
 Gln Ser Pro Ile Gly Val Leu Glu Ala Ala Ala Cys Leu Ser Tyr Lys  
 305 310 315 320  
 Ser Gly Asp Glu Arg Thr Val Gly Ser Cys Thr Thr Ser Ser His Thr  
 325 330 335  
 Lys Arg Arg Lys Leu Asp Thr Ser Ser Leu Glu His Gly Thr Ser Glu  
 340 345 350

Lys Leu

<210> 32  
 <211> 373  
 <212> PRT  
 <213> *Nicotiana tabacum*

<400> 32  
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 1 5 10 15

27

Val Gly Ser Pro His  
370